

With the Author's Compliments.

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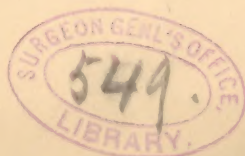
## ON THE ANATOMY OF OBLIQUE INGUINAL HERNIA, WITH SPECIAL REFERENCE TO THE OPERATION FOR ITS RADICAL CURE, AND A DESCRIPTION OF A MODIFIED PROCEDURE FOR THIS PURPOSE.

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ACCORDING to the accepted teachings of standard authorities on anatomy and surgery, the hernial sac, in cases of the oblique or indirect inguinal variety, comes down from the abdominal cavity through the tube, derived from the transversalis fascia, which encloses the spermatic vessels and duct, and the lumen of which is the so-called inguinal canal. Among the coverings of this species of hernia is always mentioned the *infundibuliform fascia*, which is easily demonstrated as a close investment of the constituents of the cord.

On this view a soft knuckle of bowel pushes before it the parietal peritoneum, and forces its way into the narrow tube, alongside of the spermatic duct and vessels, stretching the tube open until it emerges at the external ring. One writer distinctly says that the hernia "forces the internal ring." And in a work of wide reputation the canal is figured as partly so distended, the dilated and undilated portions being readily distinguishable.

It seems to me that if this idea be correct every scrotal hernia would be of the variety known as *infantile*, having only sac and tunica vaginalis between the bowel and the testis. Moreover, it would seem that the occurrence, rare as it is, of properitoneal



or interstitial hernia, is inexplicable, unless it be admitted at least that there are exceptions to this rule; that the bowel may descend with its sac entirely clear of the so-called inguinal canal, and be not in its course along with the constituents of the cord by the envelope which surrounds them.

Again, we often find the sac easily isolated, so that it can be readily lifted up clear of the cord, leaving the spermatic vessels and duct lying surrounded by the intact infundibuliform fascia. This, I presume, is a matter of common observation with others, as it has been with me.

A few words now as to the anatomy of the inguinal region, and especially of the so-called canal, of which several anatomical writers admit that it is such only in name. Having become interested in this matter, I have made within the last month dissections of this part of the body in over twenty adult subjects, three of which were injected, the rest fresh. Opportunity has not offered for me to make any investigation of the condition in early life, and only once in a case of hernia.

I have not found in any instance any dimpling or pouching of the peritoneum, or anything in the nature of an adhesion of it at or near the inguinal ring; in other words, any such arrangement as would seem to predispose to an extrusion of the bowel at that point more than elsewhere. Nor has there been any such pouching of the transversalis fascia; in making the dissection from within I found the internal ring almost always by following up the spermatic duct from within the pelvis. Sometimes I found at this point a crescentic fold or thickening of the fascia at the inner or median side of the ring; sometimes there was besides this another fold at the outer side, but more generally there was no such arrangement. I was never able to push my finger along the course of the cord, within the infundibuliform fascia, without rupturing this latter; but I did not often make the attempt, and perhaps might have used more care when I did.

The length of the canal, measured from the entrance of the spermatic duct to the point of divergence of the columns of the external ring, was never over an inch. In one large and well-



developed adult male it was only half an inch. Circumstances prevented my making memoranda in all the cases.

Some weeks since, in talking of this matter with Prof. Brinton, he asked me to examine the subject he was using at the time in his lectures upon hernia. On complete dissection we found the mouth of the hernial sac a full inch above the point where the constituents of the cord entered the canal.

Cloquet, Scarpa, Bourgery, and Cooper give representations of hernial sacs, drawn from dissections, in which so far as appears there is no trace of connection with the cord. (Cloquet, *Recherches Anatomiques sur les Hernies de l'Abdomen*, Plate I., Figs. 4 and 5; plate V., Figs. 1, 4, 5, and 7; plate VI., Figs. 6 and 7. Scarpa, *Atlas*, Plate VI., Figs. 1 and 4, and Plate VII. Cooper, *Anatomy and Surgical Treatment of Abdominal Hernia*, Am. ed., Plate V, Fig. 7.)

In view of the facts now presented, I venture to question the correctness of the prevailing conception of the course of oblique inguinal hernia, namely, that the bowel, enclosed in the sac, follows exactly in the track of the testicle, entering the canal at the internal ring, passing through it, and emerging at the external ring. Of course, it will be understood that this remark has reference only to hernias which are acquired after the complete closure of the peritoneal process, and not to the congenital variety. The anatomical conditions by which the descent of the testis is determined are well-known. But in the case of the bowel the immediate cause is pressure from above, driving it in the direction of least resistance.

My conviction is that the hernial sac does not usually occupy the inguinal canal at all, but that in a large proportion of cases, at least, an oblique inguinal hernia is really ventral, only making its way out at the external ring, and therefore seeming to have passed through the canal.

When the abdominal wall is rendered tense in any muscular effort, and the contents are compressed, it will easily be seen that at the lower part on either side, just above the groin, there will usually be less firm resistance than elsewhere. Peritoneum and transversalis fascia may yield; but the transversalis and

internal oblique muscles, backed by the tendon of the external oblique, will oppose too firm a barrier, except at their lower edge, along which the bowel may be crowded behind the last-named tendon, until at the external ring the lax intercolumnar fascia allows it to come forward and form a tumor perceptible externally. As it must always be that the beginning of this outward passage of the bowel and sac is low down, and not far from the point where the cord enters the canal, the hernial sac and the cord must lie very nearly if not exactly parallel to one another.

Perhaps it may seem a presumptuous thing to question views which have so long been universally accepted; but my earnest hope is that the statements I have now made may be tested, as they can readily be by anyone having opportunities for dissection. If they are well founded, as I believe them to be, they may have some bearing on the question of the radical operation for hernia.

If the hernial sac and the cord are quite separate, or if in contact are independent of each other, why is it necessary to interfere with the cord? If we can effectually obliterate the sac and prevent the descent of the bowel without disturbing the cord or dissecting up the abdominal wall, it would seem a desirable thing to do, for it is a good rule in surgery to accomplish our objects with the least possible disturbance or sacrifice of healthy structures.

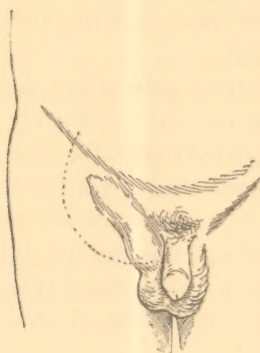
I beg to present to the Association a method of operating which I have myself employed in a number of cases, and which has withstood some severe tests; although I must admit that in no instance has sufficient time elapsed for me to speak of ultimate results.

This method consists in complete isolation of the sac, and its invagination so as to convert the whole of it into a solid mass, plugging its mouth, and anchoring it by a suture passing through the tendon of the external oblique muscle.

A curved incision is first made, describing a semicircular flap of ample size. (Fig. 1.) This flap being reflected up, the hernia is exposed, and the sac is completely isolated, which

can often be done simply by tearing with the fingers. Two silk sutures are now passed through the empty sac, one on either side, at a point close to the external ring; a hæmostatic forceps is applied to the ends of each. The sac being thus

FIG. 1.



under control, its fundus or tip is inverted, and with the fore-finger of the left hand is pushed up as far as it will go. (Fig. 2.) I believe that in so doing the tip of the finger, and, of course, the fundus of the sac, can generally be carried as far as

FIG. 2.



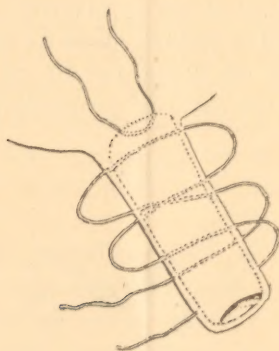
the mouth of the sac—the orifice by which the bowel emerged from the abdominal cavity. Now a slightly curved needle, with an eye near the point, and carrying a thoroughly sterilized silk thread, is passed up along the finger, to be pushed out at one



side through the tip of the sac and the tendon of the external oblique muscle. One end of the silk thread is caught and drawn out, and then the needle is withdrawn slightly, to be again pushed out at the other side of the tip of the sac and through the tendon. The other end of the silk thread is now detached from the needle, which is wholly withdrawn, and the two ends of the thread are caught together in a hæmostatic forceps, but left quite slack.

The doubled sac is now gently and cautiously drawn downward by means of the two lateral threads and the fingers, and with a small curved needle a fine silk suture is carried from side to side back and forward through it from below upward as far as possible, and then from above downward, in such a manner that when the two ends of this suture are pulled tight the sac can be crumpled up into a solid mass (Fig. 3.) These ends are tied and cut off short, and the lateral threads are removed.

FIG. 3.



By drawing upon the ends of the other silk thread the plug formed of the crumpled-up sac is now pulled up tightly against the under surface of the tendon of the external oblique. It is anchored there by tying the ends on the upper surface of this tendon, when they are cut off short. The skin-flap is now replaced, and the wound sutured and dressed in the usual way.

In a former paper on this subject I spoke of the sac as being

inverted as far as the internal ring, and fastened there. But it seems to me now that the object aimed at should be simply to invert the sac as completely as possible, so that its tip shall be carried up and secured at its mouth, and its (former) lower portion made to constitute a firm plug occluding its neck.

Of course, the patient must be kept at absolute rest in bed until after the wound is completely healed, but I have not insisted upon any special time of confinement. A truss does not seem to me to be necessary, if the patient avoids any sudden or violent muscular effort likely to bring undue stress upon the parts. How long such caution is to be observed should, it seems to me, be determined in each case according to circumstances.

The solidity and efficiency of the plug must depend upon the firmness of the adhesion which takes place between the extensive serous surfaces which are held in contact by the fine silk suture, as well as upon the security of the suture which holds the plug against the under surface of the tendon of the external oblique muscle.

In one of my nine cases, that of a man fifty-four years of age, a severe bronchitis came on a few days after the operation, and the cough was for several weeks very frequent and very violent; but it produced no effect upon the condition of the hernia, and the man left the hospital well, without any recurrence of the latter. Another patient, a man aged twenty-two years, was operated on October 24, 1894, and has been at work as an orderly in the Pennsylvania Hospital for five months without any truss. But, as was before said, the length of time that has elapsed is too short for me to make a positive claim. I should be glad if the simplicity of the procedure and its rationale should so far commend it to the profession as to induce a trial of it by other surgeons.

Should this plan in any case prove a total failure, the parts are still in condition for a renewed attempt, either by the same or by any other method.

